



Financial and environmental costs of manual versus automated control of end-tidal gas concentrations

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Year: 2013
Journal: Anaesthesia and Intensive Care. 41 (1): 95-101

Abstract:

Emerging technologies that reduce the economic and environmental costs of anaesthesia have had limited assessment. We hypothesised that automated control of end-tidal gases, a new feature in anaesthesia machines, will consistently reduce volatile agent consumption cost and greenhouse gas emissions. As part of the planned replacement of anaesthesia machines in a tertiary hospital, we performed a prospective before and after study comparing the cost and greenhouse gas emissions of isoflurane, sevoflurane and desflurane when using manual versus automated control of end-tidal gases. We analysed 3675 general anaesthesia cases with inhalational agents: 1865 using manual control and 1810 using automated control. Volatile agent cost was \$18.87/hour using manual control and \$13.82/hour using automated control: mean decrease \$5.05/hour (95% confidence interval: \$0.88-9.22/hour, PEuro Surveillance (Bulletin European Sur Les Maladies Transmissibles; European Communicable Disease Bulletin)0.0243). The 100-year global warming potential decreased from 23.2 kg/hour of carbon dioxide equivalents to 13.0 kg/hour: mean decrease 10.2 kg/hour (95% confidence interval: 2.7-17.7 kg/hour, PEuro Surveillance (Bulletin European Sur Les Maladies Transmissibles; European Communicable Disease Bulletin)0.0179). Automated control reduced costs by 27%. Greenhouse gas emissions decreased by 44%, a greater than expected decrease facilitated by a proportional reduction in desflurane use. Automated control of end-tidal gases increases participation in low flow anaesthesia with economic and environmental benefits.

Source: [http://www.aaic.net.au/Document/?DEuro Surveillance \(Bulletin European Sur Les Maladies Transmissibles; European Communicable Disease Bulletin\)20120640](http://www.aaic.net.au/Document/?DEuro%20Surveillance%20(Bulletin%20European%20Sur%20Les%20Maladies%20Transmissibles;%20European%20Communicable%20Disease%20Bulletin)20120640)

Resource Description

Exposure :

weather or climate related pathway by which climate change affects health

Unspecified Exposure

Geographic Feature:

resource focuses on specific type of geography

None or Unspecified

Geographic Location:

resource focuses on specific location

Climate Change and Human Health Literature Portal

Non-United States

Non-United States: Australasia

Health Impact: 

specification of health effect or disease related to climate change exposure

Health Outcome Unspecified

Medical Community Engagement: 

resource focus on how the medical community discusses or acts to address health impacts of climate change

A focus of content

Mitigation/Adaptation: 

mitigation or adaptation strategy is a focus of resource

Mitigation

Resource Type: 

format or standard characteristic of resource

Research Article

Timescale: 

time period studied

Time Scale Unspecified